

<p>الف) $\lim_{x \rightarrow 2^+} f(x) - 3 = f(2^+) - 3 = 5$</p>	<p>ب) $\lim_{x \rightarrow 2^-} f(x) - 3 = f(2^-) - 3 = 5$</p>	<p>۱</p>
<p>الف) $\lim_{x \rightarrow 2^+} f[x] - 3 = f[2^+] - 3 = 1 - 3 = 5$</p>	<p>ب) $\lim_{x \rightarrow 2^-} f[x] - 3 = f[2^-] - 3 = 4 - 3 = 1$</p>	<p>۲</p>
<p>الف) $\lim_{x \rightarrow 2^+} [f(x) - 3] = [f(2^+) - 3] = [5] = 5$</p>	<p>ب) $\lim_{x \rightarrow 2^-} [f(x) - 3] = [f(2^-) - 3] = [5] = 5$</p>	<p>۳</p>
<p>الف) $\left[\lim_{x \rightarrow 2^+} f(x) - 3 \right] = [5] = 5$</p>	<p>ب) $\left[\lim_{x \rightarrow 2^-} f(x) - 3 \right] = [5] = 5$</p>	<p>۴</p>
<p>الف)</p> $\lim_{x \rightarrow 3} \frac{f(x) - 3}{x - 3} \begin{matrix} \nearrow_{2^+} & \frac{9}{0^+} = +\infty \\ \searrow_{2^-} & \frac{9}{0^-} = -\infty \end{matrix}$	<p>ب)</p> $\lim_{x \rightarrow 3} \frac{f(x) - 3}{(x - 3)^2} \begin{matrix} \nearrow_{2^+} & \frac{9}{0^+} = +\infty \\ \searrow_{2^-} & \frac{9}{0^+} = +\infty \end{matrix}$	<p>۵</p>

الف)

$$\lim_{x \rightarrow 0} \frac{\sqrt{x} - 0}{\sqrt{x} - 0}$$

$$\begin{matrix} x^+ & \rightarrow & \frac{0}{\sqrt{0^+}} = +\infty \\ x^- & \rightarrow & \frac{0}{\sqrt{0^-}} = -\infty \end{matrix}$$

ب)

$$\lim_{x \rightarrow 0} \frac{\sqrt{x} - 0}{\sqrt{x^2 - 0}}$$

$$\begin{matrix} x^+ & \rightarrow & \frac{0}{\sqrt{0^+}} = +\infty \\ x^- & \rightarrow & \frac{0}{\sqrt{0^-}} = -\infty \end{matrix}$$

الف)

$$\lim_{x \rightarrow 0} \frac{\sqrt{x} - 0}{x^2 - \sqrt{x}}$$

$$\begin{matrix} x^+ & \rightarrow & \frac{0}{\sqrt{0^+}} = 0 \\ x^- & \rightarrow & \frac{0}{\sqrt{0^-}} = +\infty \end{matrix}$$

ب)

$$\lim_{x \rightarrow 0} \frac{\sqrt{x} - 0}{[x - 0]}$$

$$\begin{matrix} x^+ & \rightarrow & \frac{0}{0} = 0 \\ x^- & \rightarrow & \frac{0}{-1} = -0 \end{matrix}$$

الف) $\lim_{x \rightarrow 4} [x] + [-2x]$

$x \rightarrow 4$

$4^+ \rightarrow [4^+] + [-4^-] = 4 - 4 = 0$

$4^- \rightarrow [4^-] + [-4^+] = 3 - 4 = -1$

ب) $\lim_{x \rightarrow -4} [-x] + [2x]$

$x \rightarrow -4$

$-4^+ \rightarrow [4^-] + [-8^+] = 3 - 8 = -5$

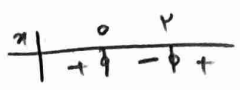
$-4^- \rightarrow [4^+] + [-8^-] = 4 - 7 = -3$

الف) $\lim_{x \rightarrow 2} [x^2 - 4x]$

$x \rightarrow 2$

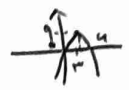
$2^+ \rightarrow [0^+] = 0$

$2^- \rightarrow [0^-] = -1$



ب) $\lim_{x \rightarrow 3} [4x - x^2] = [9] = 1$

$x \rightarrow 3$



الف)

$$\lim_{x \rightarrow 1} \frac{|x-1|}{x^2 - 3x + 2}$$

$$\begin{matrix} x^+ & \rightarrow & \frac{x-1}{(x-1)(x-2)} = \frac{1}{x-2} \\ x^- & \rightarrow & \frac{-(x-1)}{(x-1)(x-2)} = -\frac{1}{x-2} \end{matrix}$$

ب)

$$\lim_{x \rightarrow 1} \frac{x - [x]}{x^2 - 1}$$

$$\begin{matrix} 1^+ & \rightarrow & \frac{x-1}{(x-1)(x+1)} = \frac{1}{x+1} \\ 1^- & \rightarrow & \frac{x}{x^2-1} = -\infty \end{matrix}$$